

What is claimed is:

1. A fuel cell comprising a pair of separators and electrolyte electrode assemblies interposed between said separators, said electrolyte electrode assemblies each including an anode, and a cathode, and an electrolyte interposed between said anode and said cathode, wherein each of said separators includes at least two plates stacked together;

a fuel gas channel for supplying a fuel gas to said anode, and an oxygen-containing gas channel for supplying an oxygen-containing gas to said cathode are formed between said plates; and

said electrolyte electrode assemblies are arranged along at least one virtual circle concentric with a central axis of said separators.

2. A fuel cell according to claim 1, wherein said electrolyte electrode assemblies are arranged along at least two virtual circles concentric with a central axis of said separators.

3. A fuel cell according to claim 2, wherein said virtual circles include an inner circle and an outer circle, and electrolyte electrode assemblies arranged on said inner circle are out of radial alignment with electrolyte electrode assemblies arranged on said outer circle.

4. A fuel cell according to claim 2, wherein said virtual circles include an inner circle and an outer circle, and said electrolyte electrode assemblies are arranged along said inner circle and said outer circle alternately.

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5. A fuel cell according to claim 1, wherein said fuel gas and said oxygen-containing gas are supplied through said fuel gas channel and said oxygen-containing gas channel to central regions on opposite surfaces of said electrolyte electrode assemblies, respectively.

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6. A fuel cell according to claim 1, wherein said fuel gas channel and said oxygen-containing gas channel are provided between two of said plates.

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7. A fuel cell according to claim 6, wherein said discharge passage for discharging said fuel gas and said oxygen-containing gas after reaction is provided between said separators.

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8. A fuel cell according to claim 1, wherein a circular hole extends through said separators centrally; said electrolyte electrode assemblies have a circular disk shape; and

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said electrolyte electrode assemblies are arranged around said circular hole, along at least one virtual circle concentric with said circular hole.

9. A fuel cell according to claim 8, wherein said electrolyte electrode assemblies are arranged around said circular hole, along at least two virtual circle concentric with said circular hole.

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10. A fuel cell according to claim 1, wherein said electrolyte is a solid oxide.

10 11. A fuel cell stack formed by stacking a plurality of fuel cells and providing end plates at opposite ends in a stacking direction of said fuel cells, said fuel cells each including a pair of disk-shaped separators and a plurality of circular disk-shaped electrolyte electrode assemblies, said electrolyte electrode assemblies each including an
15 anode, a cathode, and an electrolyte, wherein

said electrolyte electrode assemblies are arranged along at least one virtual circle concentric with a central axis of said separators; and

20 each of said end plates has holes for inserting bolts to tighten said fuel cell stack, and said holes and said electrolyte electrode assemblies are arranged alternately.

25 12. A fuel cell according to claim 11, wherein said electrolyte electrode assemblies are arranged along at least two virtual circles concentric with a central axis of said separators.

13. A fuel cell comprising a pair of separators and electrolyte electrode assemblies interposed between said separators, said electrolyte electrode assemblies each including an anode, and a cathode, and an electrolyte interposed between said anode and cathode, wherein

each of said separators includes a plurality of plates stacked together;

a fuel gas channel for supplying a fuel gas to said anode, and an oxygen-containing gas channel for supplying an oxygen-containing gas to said cathode are formed between said plates; and

at least one of said plates has protrusions for positioning said electrolyte electrode assemblies between said separators.

14. A fuel cell according to claim 13, wherein said protrusions are provided so that said electrolyte electrode assemblies are arranged along at least one virtual circle concentric with a central axis of said separators.

15. A fuel cell according to claim 14, wherein said virtual circles include an inner circle and an outer circle, and electrolyte electrode assemblies arranged on said inner circle are out of radial alignment with electrolyte electrode assemblies arranged on said outer circle.

16. A fuel cell according to claim 13, wherein at

least three protrusions are provided for positioning each of said electrolyte electrode assemblies inside said at least three protrusions with a clearance.

5 17. A fuel cell according to claim 13, wherein said electrolyte is a solid oxide.

10 18. A fuel cell stack formed by stacking a plurality of fuel cells and providing flanges at opposite ends in a stacking direction of said fuel cells, said fuel cells each including disk-shaped separators and a plurality of circular disk-shaped electrolyte electrode assemblies interposed between said separators, said electrolyte electrode assemblies each including an anode, a cathode, and an
15 electrolyte, wherein

 each of said separators has protrusions for positioning said electrolyte electrode assemblies between said separators;

20 said electrolyte electrode assemblies are arranged along at least one circle concentric with a central axis of said separators; and

 each of said flanges has holes for inserting bolts to tighten said fuel cell stack, and said holes and said electrolyte electrode assemblies are arranged alternately.

25 19. A fuel cell stack according to claim 18, wherein said protrusions are provided so that said electrolyte

electrode assemblies are arranged along at least one virtual circle concentric with a central axis of said separators.

5 20. A fuel cell according to claim 18, wherein at least three protrusions are provided for positioning each of said electrolyte electrode assemblies inside said at least three protrusions with a clearance.